

02/27/14 Agenda:

- Update Properties Book
 - Fill in diagrams on the cover
 - Properties of a Rhombus
 - Properties of a Square
- Review Homework
 - Worksheet 8 - Square & Rhombi
- Section 8.5 day 1 - Properties of Kites
- Update Properties Book
 - Properties of a Kite
- Homework
 - Worksheet 9 - Kites

Section 8.4 day 1 - Properties of Kites

Target 8E

February 27, 2014

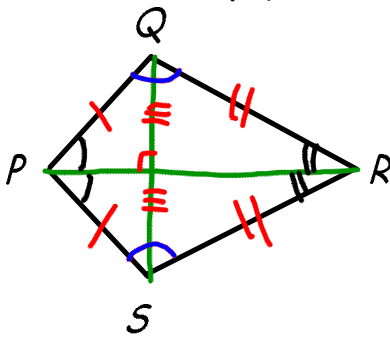
Goal: Apply properties of special quadrilaterals (rectangles, rhombi, squares, kites, and trapezoids) to find missing information.

Quadrilateral

Four sided figure

Sum of angles = 360°

Kite



All properties of a Quadrilateral plus:

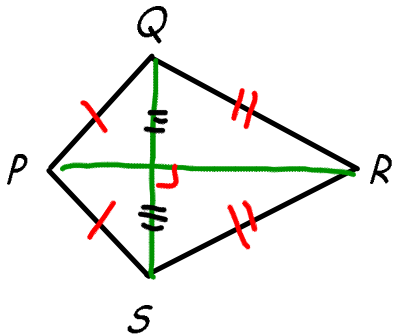
- TWO PAIR OF CONSECUTIVE \cong SIDES BUT OPPOSITE SIDES ARE NOT \cong
- DIAGONALS ARE \perp
- EXACTLY ONE PAIR OF OPPOSITE ANGLES \cong
- ONE DIAGONAL BISECTS A PAIR OF OPPOSITE ANGLES
- ONE DIAGONAL IS THE \perp BISECTOR OF THE OTHER

Section 8.4 day 1 - Properties of Kites

Target 8E

February 27, 2014

Proving it's a Kite



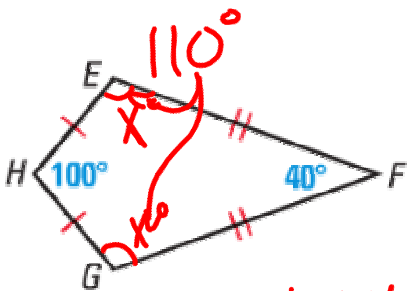
- If a quadrilateral has 2 pair of consecutive \cong sides but opposite sides are not \cong , it's a kite.
- If one diagonal is the perpendicular bisector of the other, it's a kite.

Section 8.5 day 1 - Properties of Kites

Target 8E

February 27, 2014

ANGLES OF KITES $EFGH$ is a kite. Find $m\angle G$.

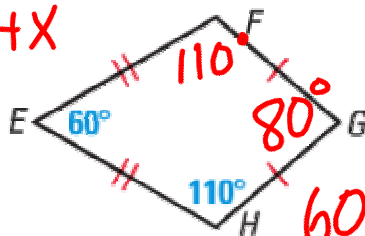


$$360 = 100 + 40 + x + x$$

$$360 = 140 + 2x$$

$$220 = 2x$$

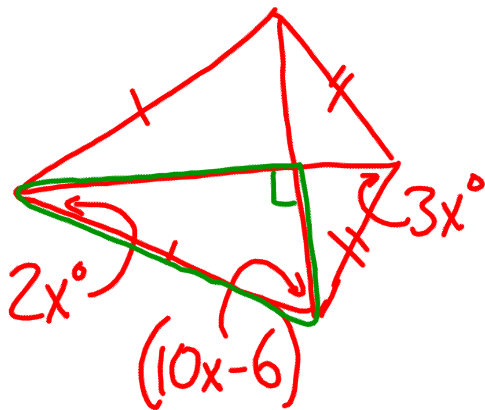
$$110 = x$$



$$60 + 110 + 110 + \angle G = 360$$

$$\angle G + 280 = 360$$

$$\angle G = 80$$



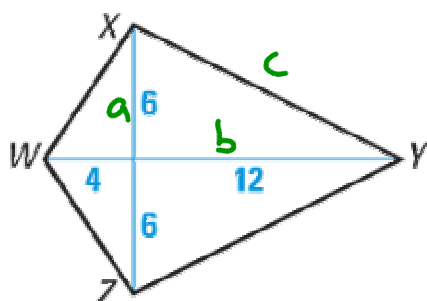
$$2x + (10x - 6) = 90$$

Section 8.5 day 1 - Properties of Kites

Target 8E

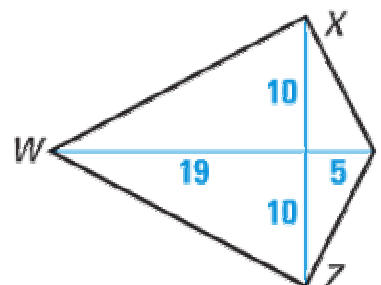
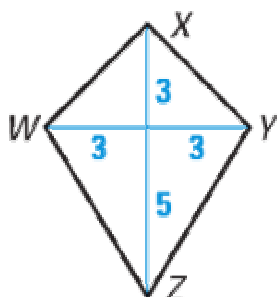
February 27, 2014

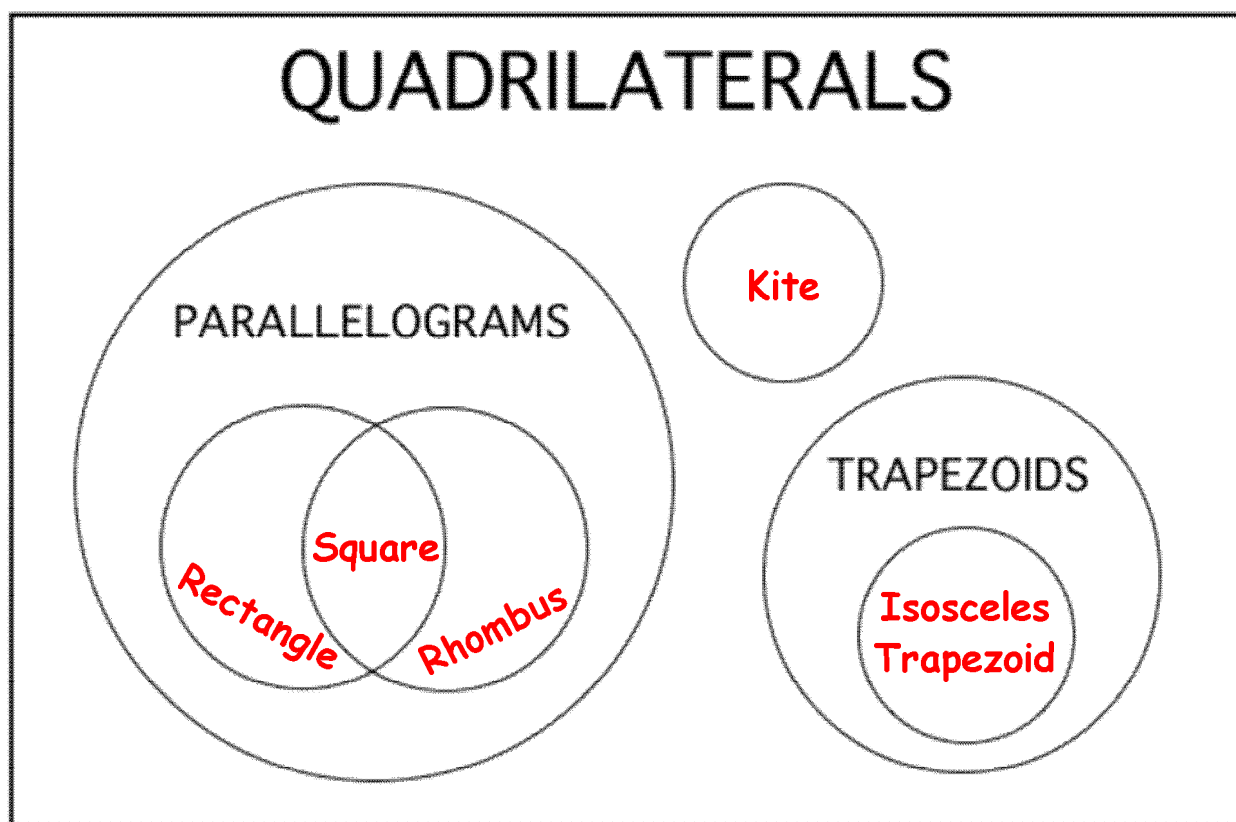
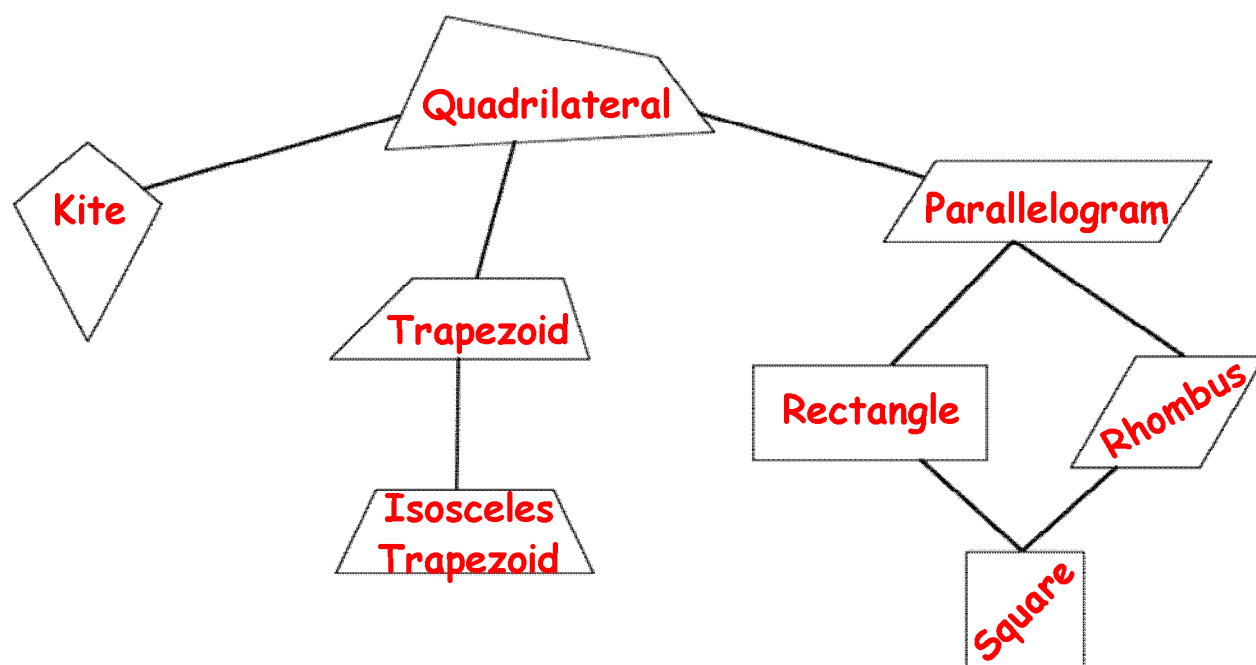
DIAGONALS OF KITES Use Theorem 8.18 and the Pythagorean Theorem to find the side lengths of the kite. Write the lengths in simplest radical form.



\overline{XY}

$$\begin{aligned} a^2 + b^2 &= c^2 \\ 6^2 + 12^2 &= (\overline{XY})^2 \\ 36 + 144 &= (\overline{XY})^2 \\ 180 &= (\overline{XY})^2 \\ \sqrt{180} &= \sqrt{(\overline{XY})^2} \\ 13.4 &= \overline{XY} \end{aligned}$$

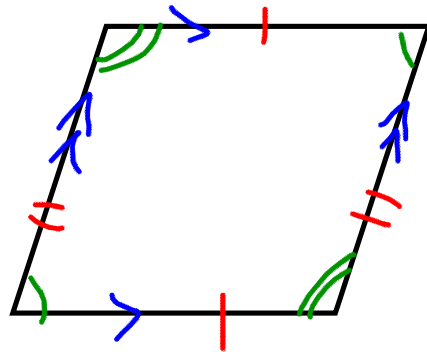




Properties of a Parallelogram.

Page 1

Quadrilateral
↓
Parallelogram



Properties:

- Opposite sides are parallel.
- Opposite sides are congruent.
- Opposite angles are congruent.
- Consecutive angles are supplementary.
- The diagonals bisect each other.

Quadrilaterals Book

Proving a Quadrilateral is a Parallelogram.

Proving it's a Parallelogram:

Page 2

Show any of the following:

- Both pairs of opposite sides parallel.
- Both pairs of opposite sides are congruent.
- Both pairs of opposite angles are congruent.
- The diagonals bisect each other.
- ONE pair of opposite sides are both congruent and parallel



Properties of a Rectangle.

Page 3

Quadrilateral



Parallelogram



Rectangle



Rectangle Properties:

- All properties of a Parallelogram.
- It has 4 right angles.
- The diagonals are congruent.
 - The diagonals create 4 isosceles triangles.

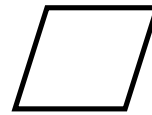
Proving it's a Rectangle:

- If a quadrilateral has 4 right angles, it's a Rectangle.
- If the diagonals of a parallelogram are congruent, it's a Rectangle.

Properties of a Rhombus.

Page 4

Quadrilateral
↓
Parallelogram
↓
Rhombus



Rhombus Properties:

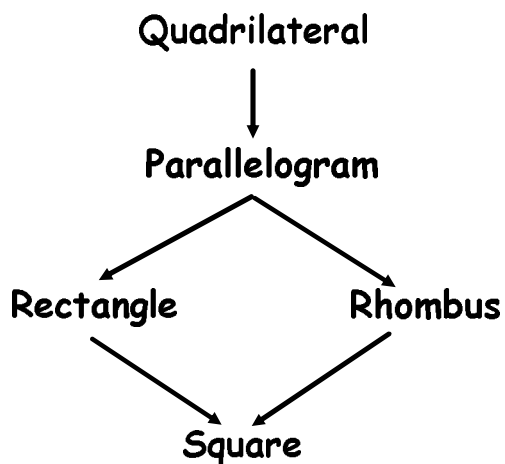
- All properties of a Parallelogram.
- It has 4 congruent sides.
- Its diagonals are perpendicular.
- Each diagonal bisects the pair of opposite angles.
 - The diagonals create 4 \cong right triangles.

Proving it's a Rhombus:

- If a quadrilateral has 4 congruent sides, it's a Rhombus.
- If the diagonals of a parallelogram are perpendicular, it's a Rhombus.
- If each diagonal of a parallelogram bisect a pair of opposite angles, it's a Rhombus.

Properties of a Square.

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Square Properties:

- All properties a Parallelogram.
- All properties of a Rectangle.
- All properties of a Rhombus.
- The diagonals create 4 \cong right triangles (45-45-90 triangles).

Proving it's a Square:

- If a quadrilateral is BOTH a Rhombus and a Rectangle, it's a Square.

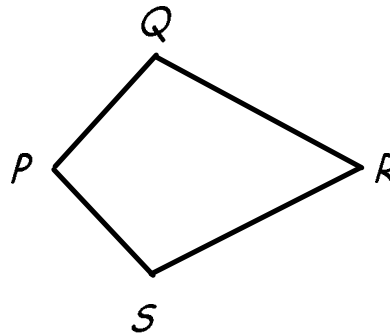
Properties of a Kite.

Page 6

Quadrilateral



Kite



Kite Properties:

- A quadrilateral with 2 pairs of consecutive \cong sides, but opposite sides are not \cong .
- The diagonals are perpendicular
- It has exactly 1 pair of opposite angles that are \cong .
- One diagonal bisects a pair of opposite angles.
- One diagonal is the perpendicular bisector of the other.

Proving it's a Kite:

- If a quadrilateral has 2 pair of consecutive \cong sides but opposite sides are not \cong , it's a kite.
- If one diagonal is the perpendicular bisector of the other, it's a kite.